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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/057,838	04/09/1998	ANTONY P. VAN DE VEN	5308-79DV	6831

7590 03/14/2007  
TIMOTHY J. O'SULLIVAN  
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RALEIGH, NC 27627

EXAMINER
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LIANG, REGINA

ART UNIT	PAPER NUMBER
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2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/14/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/057,838	<b>Applicant(s)</b> VAN DE VEN ET AL.	
	<b>Examiner</b> Regina Liang	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 17,18,20-29,31-33,35-43,49-53,55-57 and 59-64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28,29,42,49-53 and 63 is/are allowed.
- 6) ☒ Claim(s) 17,18,20-27,31-33,35-41,43,55-57,59-62 and 64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/8/07</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This Office action is in response to the amendment filed on 1/8/07.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Claim Rejections - 35 USC § 103***

3. Claims 17, 18, 20-27, 31-33, 35-41 and 55-57, 59-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (US Patent No. 5,184,114) in view of Norman et al. (US Patent No. 5,583,350).

As to claims 17, 22-23, 31-33, 55-57, Brown discloses a pixel comprising: a light emitting diode (18, Fig. 13) that emits in the blue region of the visible spectrum (25B, Fig. 13); a light emitting diode (18) that emits in the green region (25G, Fig. 13) of the visible spectrum and adjacent the blue LED; a light emitting diode (18) that emits in the red region (25R) of the visible spectrum, and adjacent to the blue LED and the green LED and a light emitting diode that emits in the red region of the visible spectrum, and adjacent to the blue LED and the green LED, the red LED. Brown further discloses that the red LED having its respective top anode contact in substantially the same plane as the anode contacts of the blue LED and the green LED (since all the LEDs are mounted on the same substrate, see Figs. 3, 6, 13, so the top anode contacts of each LED are in substantially the same plane as each other). Brown also discloses the tip contacts are the anode contacts, cathode of each diode is connected to an individual pin (col. 5, lines 8-9), and anode top contacts of each diode are connected to a common anode pin (70 in Fig. 6, and col. 5, lines 42-44).

It is noted that Brown does not specifically disclose that the red LED including at least one active layer of aluminum gallium arsenide (AlGaAs) as required in claim 17, and the LED having blue or green light emitting diode comprising a silicon carbide substrate and a group III nitride active layer as required in claim 31 and 55, respectively. Norman is cited to teach a LED device in which the red LED including at least one active layer of aluminum gallium arsenide (AlGaAs) and the blue or green light emitting diode comprising a silicon carbide substrate and a group III nitride active layer (col. 5, lines 3-22 and 36-55). It would have been obvious to one of ordinary skill in the art to have modified Brown with the features of the blue LED structure as taught by Norman because Norman provide a full color light emitting display that has red, blue, and green LEDs that have peaks in the desirable ranges in order to provide full color images (see col. 1, lines 36-39).

As to claims 18, Brown discloses the LEDs comprise respective bottom contacts, and wherein said bottom contacts are in a substantially common plane different from the common plane of the top contact (e.g. row and column as shown in Fig. 9).

As to claims 21, 35, 59, Norman discloses group III nitride active layer comprising gallium (col. 5, lines 3-22 and 36-55).

As to claims 20, 36, 37, 60, 61, Norman discloses that the green LED comprises a silicon carbide substrate and a group III (e.g. gallium) nitride active layer (col. 5, lines 3-22 and 36-55).

As to claims 24-26, 38-40, Norman discloses that the green LED comprises a gallium phosphide (col. 5, lines 3-22 and 36-55).

As to claims 27, 41, 62, Brown teaches applying different voltage to the red, green and blue LEDs according to the display data (col. 5, lines 23-28).

4. Claims 43 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (US Patent No. 5,184,114) in view of Norman et al. (US Patent No. 5,583,350) as applied to claims 17, 31 and 55 above, and further in view of Brown et al. (US Patent No. 5,583,351).

As to claims 43, 64, it is noted that Brown ('114) and Norman do not specifically disclose that the values of the emission wavelengths are usually to satisfy the CIE chromaticity diagram. Brown ('351) is cited to teach a LED display device similar to Brown ('114) and Norman. Brown ('351) further discloses the values of the emission wavelengths are usually to satisfy the CIE chromaticity diagram in order to produce a good "white" color (col. 9, lines 64-67). It would have been obvious to one ordinary skill in the art to have modified Brown ('114) and Norman with the features of the values of the emission wavelengths chosen to satisfy the CIE chromaticity in order to produce a good "white" color.

#### ***Allowable Subject Matter***

5. Claims 28, 29, 42, 49-53, 63 are allowed.

#### ***Response to Arguments***

6. Applicant's arguments filed 1/8/07 have been fully considered but they are not persuasive.

Applicant argues that Brown does not teach or suggest that the cathode of each diode is connected to an individual pin, and that the anode top contacts of each diode are connected to a common anode pin, which is not persuasive. As shown in Fig. 5 of applicant's specification,

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each R, G and B diode has an anode top contact (50) and a cathode contact (47), the anode top contacts of each R, G and B diode are connected to a common anode pad (51). Brown teaches a solid state color display system having R, G and B diodes, each diode has an anode pin (60R, 60G, 60B) and a cathode pin (62R, 62G, 62B), the anode pins in Brown correspond to the anode contacts of each R, G, and G diode as claimed, and since all the anode pins for each pixel are connected to a common conductor 70 (corresponding to the common anode pad as disclosed in applicant's specification), so the conductor 70 shown in Fig. 6 of Brown corresponds to the common anode pin as claimed, in the same manner as disclosed by applicant.

Applicant's remarks regarding claims 27, 41, 62 are not persuasive since col. 5, lines 23-28 of Brown teaches applying different voltages to color LEDs.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

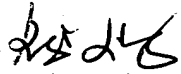
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Regina Liang whose telephone number is (571) 272-7693. The examiner can normally be reached on Monday-Friday from 8AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (571) 272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Regina Liang  
Primary Examiner  
Art Unit 2674

3/7/07